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TRENDS AND PERSPECTIVES OF THE ENERGY SECTOR IN LATIN AMERICA

This article discusses the perspectives of the development of the energy sector in Latin America, based on its own internal demand and the potential of the region.

Key words: *Latin America energy sector; energy sources; renewable energy*.

Demand for electricity is increasing rapidly in Latin America. The middle class, which buys more appliances, will continue to grow. What's more, many countries are adopting industries which consume large amounts of electricity (for example in Brazil Toyota and BMW announced that they will open their largest factories in the region). According to the International Energy Agency (IEA), it is expected that demand for electricity in Latin America will increase by 70% by 2030; this would mean that, during this period, between 130 GW of new electrical capacity will be needed; no doubt this will entail a search for primary energy sources for obtaining electricity: possibly nuclear energy and natural gas in combination with renewable energy such as wind and solar.

In this sense, there is a global movement that seeks new alternatives for creating power supply systems that meet the current demands of people and industries; systems which are economically and environmentally sustainable and take into account the availability of resources at the given country's territory or the possibility of importing them at affordable prices, systems

based on a long-term planned strategy that will serve as the basis for the current and future prosperity of the region.

To cover the additional demand Latin America plans to generate more energy from natural gas (for example the construction of a large thermal power plants in the state of Sergipe in northern Brazil, which will have a potential of 1500 MW and the thermal power plant "Energia de Celaya" in Mexico with a capacity of 1350 MW) and expand the use of renewable energy. Consider the situation in some countries in more detail.

In the case of Mexico, which seems to have entered a period of prolonged expansion of its electrical system, also it is in a phase of diversification away from fossil fuels. Thermal power plants are the main source of electricity production in the country, but renewable energy is expected to begin to grow and wind, solar and geothermal energy facilities will produce up to 16% of electricity demand [1].

On the other hand, Brazil is a market that consumes twice as much energy as Argentina, Bolivia, Chile, and Uruguay together. Approximately 70% of its electricity is obtained from hydroelectric resources. Wind, solar and natural gas are expected to have more participation in the energy market by 2030. The country also needs to diversify the energy sector to avoid energy shortages caused by drought.

The case of Colombia is very similar to Brazil. Its electrical system focuses on hydroelectric power which represents 75% of installed capacity. Thermal power plants however represent only 20%, and a small fraction is represented by biomass power plants.

Finally is Argentina, the third-largest energy market in Latin America. Currently, it mainly satisfies the supply of electricity with natural gas, which accounted for 70% of total generation in 2017. Hydropower provides 20% and renewable energy is expected to grow. If this occurs, the percentage of renewable energy capacity, including hydroelectric power, will represent almost half of Argentina's production capacity by 2030.

Latin America is already the region that generates the largest proportion of non fossil fuel energy in the world and more than 80 percent of it is

produced by hydroelectric dams. There is no great interest in building more dams due to the costs they generate for society and the environment, such as deforestation and community displacement. Likewise, some natural weather phenomena, such as El Niño, affect the hydroelectric supply and make it less predictable. One positive aspect is that wind, solar and geothermal energy are abundant in Latin America and their costs are getting lower very quickly. So now the region is able to increase renewable energy that together with expanding of cross-border electrical connections allows Latin American countries to save billions of dollars in investment, avoid blackouts and reduce their greenhouse gas emissions [2].

The wind and solar capacities of the region have increased significantly in recent years, as electricity production costs began to decrease too. The average agreed price in energy tenders for solar energy supply in Latin America decreased 87 % from 2009 to 2017 and the price of wind energy fell 37 % between 2008 and 2016.

In the next decade increasing the proportion of energy generated from renewable sources and establishing transmission lines between different countries could represent a saving of 30 billion dollars compared to current plans, since renewable energy does not add fuel costs and transmission lines expanding is much cheaper than new power plants building [3].

Integration of clean energy sources also can make supply safer. Renewable energy sources in Latin America can be complementary, they are available at different times of the day and at different times of the year in different countries. For example, Brazil has great potential for generating wind power at night, while Bolivia, Peru, and Chile can produce huge amounts of solar energy during the day. The integration would allow countries to take more advantage of this compatibility and reduce the need for combining intermittent renewable energy sources with a basic supply of electricity from natural gas [3].

However, one of the main problems of the region, which does not allow reaching a general concession in the design of an integrated electrical system, in which countries would complement each other, is totally from a political

nature. Latin America has a long tradition of very drastic turns in state administration (New Government – New Everything), the lack of stability in State planning in long term makes the region living by constant abrupt reforms that does not allow implementing of long-term promising programs that would benefit everyone enormously.

It is true that during the first decade of the new millennium, the region was heading towards a common horizon of integration led by left-wing governments (Hugo Chavez in Venezuela, Lula da Silva in Brazil or Nestor Kichner in Argentina), but all those integration projects were undermined with a political turn in 2014 (Argentina and Brazil had political crisis which lead to the change of the national governments in both countries). Initiatives such as Mercosur sought to integrate not only the commercial and economic space of the member nations, but also looked for the joint realization of large-scale projects (for example in the energy sector or infrastructure), but once again the political differences led to a stagnation of all those opportunities.

Finally, the pace of change and the combination of energy solutions in each geographical area requires the creation of predictable and stable political and economic frameworks as well as a long-term political vision that will shape the future of energy as well as being committed to achieving the objectives set. This task is not impossible. Currently, there are experienced players using cutting-edge technology and making more viable and profitable options for each profile. This allows the energy source combination to improve the electrical system and can be applied depending on the characteristics of each country [3].

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